

What is claimed is:

1. An assembly configured to be coupled to components of a plasma reactor, the assembly comprising:

an electrostatic shield; and

a process tube,

wherein the electrostatic shield and the process tube are nested such that the electrostatic shield resides around the process tube and, at times of process tube removal from the plasma reactor, the electrostatic shield is extracted with the process tube.

2. The assembly of claim 1, further comprising at least one spira-shield electrically coupled to the electrostatic shield.

3. The assembly of claim 1, further comprising at least one insulating spacer located between the electrostatic shield and an end of the process tube.

4. The assembly of claim 3, wherein the at least one insulating spacer positions the electrostatic shield from the process tube, at their closest point, by a maximum distance of one inch.

5. The assembly of claim 3, wherein the at least one insulating spacer positions the electrostatic shield from the process tube, at their closest point, by approximately 3/8 of an inch.

6. The assembly of claim 1, wherein the electrostatic shield is attached to the process tube.

7. An assembly configured to be coupled to components of a plasma reactor, the assembly comprising:

a process tube; and

an electrostatic shield patterned directly on the process tube.

8. The assembly of claim 7, wherein the electrostatic shield is patterned directly on the process tube using at least one of sputtering, evaporation or metal vapor deposition.

9. The assembly of claim 8, wherein the electrostatic shield is patterned on the process tube also using a plating process that increases a thickness of the electrostatic-shield.

10. The assembly of claim 7, further comprising at least one spira-shield electrically coupled to the electrostatic shield.

11. An assembly configured to be coupled to components of a plasma reactor, the assembly comprising:

a process tube; and

an electrostatic shield made from a flex-print material,

wherein the electrostatic shield and the process tube are nested such that the electrostatic shield resides around the process tube and, at times of process tube removal from the plasma reactor, the electrostatic shield is extracted with the process tube.

12. The assembly of claim 11, wherein the flex-print material is Kapton® polyimide film.

13. The assembly of claim 11, wherein the electrostatic shield is implemented between two sheets of the flex-print material except on a top and bottom to allow for contacts with a spira-shield.

14. The assembly of claim 11, further comprising at least one spira-shield electrically coupled to the electrostatic shield.

15. The assembly of claim 11, wherein the electrostatic shield and the process tube are coupled together.

16. The assembly of claim 11, wherein the electrostatic and the process tube are bonded together.

17. A method of fabricating an assembly including a housing, a process tube and an electrostatic shield, the method comprising:

nesting a process tube within a electrostatic shield to form the assembly; and  
electrically coupling the electrostatic shield to a housing through a spira-shield.

18. A method of fabricating an assembly including both a process tube and an electrostatic shield, the method comprising:

providing a process tube; and

patterning an electrostatic shield onto the process tube using at least one of sputtering, evaporation or metal vapor deposition.

19. The method of claim 18, wherein the patterning includes a plating process that increases a thickness of the electrostatic-shield.

20. The method of claim 18, further comprising electrically coupling the electrostatic shield to at least one spira-shield.

21. A plasma reactor comprising:

a process tube; and

an electrostatic shield coupled to the process tube,

wherein the electrostatic shield and the process tube are configured such that the electrostatic shield resides around the process tube and, at times of process tube removal from the plasma reactor, the electrostatic shield is also extracted.